MEETING SUMMARY

Hunters Point Naval Shipyard Technical Team Meeting

MEETING DATES: January 17-18, 2018

LOCATION: Hunters Point Naval Shipyard, San Francisco, California

ATTENDEES:

Nina Bacey/DTSC
Stephen Banister/Navy BRAC
Craig Bias/Remwerks
Pat Brooks/Navy BRAC
Bob Burns/NGTS
Jana Dawson/Tech Law
Scott Hay/Cabrera
Kim Henderson/CH2M
Danielle Janda/Navy BRAC
Tracy Jue/CDPH
Lily Lee/EPA
Matt Liscio/Navy RASO
Alex Lopez/Perma-Fix
Sarah Roberts/ORAU
Sheetal Singh/CDPH
Matt Slack/Navy RASO
Kevin Smallwood/CH2M
Kira Sykes/CH2M
Tim Vitkus/ORAU

By phone:
Karla Brasaemle/Tech Law
Brianna Fairbanks/EPA
Donna Getty/Leidos
Jim Smith/NRC
Tina Ures/Water Board

DATE: February 8, 2018

January 17, 2018

I. Introductions, Meeting Purpose, and Goal for Day 1

The meeting was started with introductions and the Day 1 meeting objective for the health physicists to review and discuss the current conceptual site model (CSM) and identify and agree on known releases. This will help lead into tomorrow's discussion of the decision criteria for the collection of soil and building data. Lily noted that the Technical Team can discuss and come to an understanding of the CSM; however, a consensus, agreement, or commitment cannot be made without the input of managers.

II. Review Agenda, Roles, and Ground Rules

The agenda was reviewed and the start time for Day 2 was changed to 9:00 AM for the site visit and to start the technical discussions at 11:30 AM to allow for a previously scheduled call for some team members.

Sarah Roberts/Oak Ridge Associated Universities (ORAU) was identified as the facilitator for the meeting and read through the ground rules.

III. CSM

The history of Hunters Point Naval Shipyard (HPNS) and CSM were reviewed and the draft CSM, provided to the team prior to the meeting, was updated real-time in redline format. Key discussion points and changes to the CSM were as follows.

Site history

- Radiography and calibration sources were added. The Historical Radiological Assessment (HRA) describes gamma radiography and calibration sources (using Ra-226 prior to the mid-1950s) and the potential for leakage and repairs in buildings (listed in Table 6-1 in the HRA).
- The potential for fallout to impact surface soil was added and that former surface soil may not still be at the surface due to fill activities.
- Jana indicated that the HRA identified work on nuclear-powered ships at Mare Island Naval Shipyard. Matt Slack explained that HPNS (also historically called San Francisco Shipyard Annex) was an annex to Mare Island and Treasure Island. While there was work conducted on nuclear-powered ships at HPNS, it was not nuclear work as the nuclear facilities were located at Mare Island. The HRA is in 2 volumes and volume 1 covers the nuclear work and volume 2 covers the non-nuclear work.

Historical site conditions

- Text regarding the dredge spoils used as fill was added and was mixed. There is bay mud or bedrock present that marks the bottom extent of fill material.
- The separation of the storm drainage system into storm drains and sanitary sewers in 1958 was clarified to indicate that it was separated in 1958, 1973, and 1976, but never completed.

Potential historical sources of contamination

- Animal research was added and associated buildings will be added.
- Radioluminescent devices and incidental disposal was added.
- Leaking radiography and calibration sources was added.

Known release areas

- Added to Parcel G, Building 364 that contaminated lines were connected to the liquid waste tanks and not the sanitary sewer.
- Added Parcel E, Building 707 solid rad waste handling and animal research area.
- Added Ship Berths Survey Unit 4 based on contamination of soil and on concrete, fairly low activity with radium dial or radioluminescent device.
- FUDS Building 815 is included and it is because it was connected to the sanitary sewer. Buildings 211/253 and drain lines outside of Pumphouse 205 in Parcel C are not included because investigation and remediation is ongoing.
- Karla indicated that Parcel B, Building 103 had radium (Ra)-226 concentration of 6.18 picocuries per gram (pCi/g) in crawl space soil (from a 3/18/02 email from Vincent Vincente/RASO to Steve Dean/EPA). The lab report was found and reviewed and it was agreed that the data was unreliable based on a data quality issue.
- **Action Scott -** Review Parcel E, Building 529 final status survey results for elevated results associated with underground piping outside the underground storage vault and add to CSM if needed.
- **Action Craig and Matt Slack -** Look into lab report for Parcel G, Building 366 cesium (Cs)-137 data. Matt recalls that the sample was likely dust collected from ventilation system with a low sample mass; therefore, there were large error bars.
- A list of buildings from the HRA will be added.

Radionuclides of concern (ROCs)

- Discussed some line of evidence as to why the Ra-226 results were overestimated and there is not widespread contamination as was previously believed:
    - On-site Ra-226 results are not reliable estimates using the 186 kiloelectron volt (keV) peak. Tetra Tech EC, Inc. (TtEC) reported a lot of data above release criteria based on this data and it was used in the 2008 CSM.
    - Low-level radioactive waste (LLRW) waste bins were tested via 5-point composites and only 3 out of ~1,400 bins had results with Ra-226 above the release criteria.
    - Drain lines historically discharged to the bay and hundreds of sediment samples collected do not reflect contamination.
- Sheetal asked the highest Ra-226 found in soil in Parcel G. The highest Ra-226 result was 4.6 pCi/g from a trench unit whereas the highest bismuth (Bi)-214 was 2.5 pCi/g. Lily indicated that the highest Ra-226 result in the removal action completion report is 5.8 pCi/g from TU 84 and in Naval Installation Restoration Information Solution (NIRIS) database it is 8.05 pCi/g.
- EPA recommended adding plutonium (Pu)-239 for the 500 series area in Parcel E, thorium (Th)-232 in Building 130 gravel in Parcel B, and americium (Am)-241 in the vicinity of Building 114 in Parcel B and discussed as follows:
    - Am-241 is not listed in the record of decision (ROD) as an ROC, the source is modern, and if the source was within the building it would have been well-sealed. The Team agreed that Am-241 does not need to be added.
    - Th-232 was from a Steve Dean/EPA (former health physicist) email but would be expected in gravel and is likely NORM. Therefore, it was not added.
    - Pu-239 for the storage vault and piping in the 500 series area in Parcel E and was added to the CSM.

Matt Slack indicated that there are historical point sources at buildings and we know where they are and they were addressed by contractors other than TtEC. TtEC focused on the storm drains and sewer lines. At the time, the Navy did not feel that it was necessary to remove all the lines; however, regulators recommended removal and it was funded and conducted. Moving forward, if the known release areas are focused on and if no contamination is found, a tiered approach can be used for sampling. Lily indicated that is why the prove-out concept was offered to the Navy. She noted that the 2008 CSM identified contamination was present and was the basis for the ROD. The CSM was written for the Navy, by TtEC. As discussed, there is potential for false positives and evidence of potential falsification in the data collected by TtEC. Multiple lines of evidence indicate that there was not contamination and examples can be discussed. Sheetal recommended in future documents to capture this and provide the lines of evidence for why the 2008 CSM is no longer accurate.

<u>Potential migration pathways</u>

- Jana asked if groundwater has been investigated. Pat stated that groundwater has been investigated and there has been no radioactive contamination identified in groundwater at HPNS. Jana asked about adding that at times the sea gates were not working and water from the bay infiltrated to the site. Scott indicated that the tide is not considered turbulent enough flow for a significant migration pathway.
- Release of sediments from breaks or seams during pressure washing of drain lines was added.

<u>Current status</u>

- Added that sanitary sewer lines were periodically power washed prior to 2000.

- Added that 1-foot of soil surrounding the storm drain and sanitary sewer pipe was removed. There are some drain lines in Parcel C Historic District and Parcel E that remain in-place but most of the sewer lines have been completely removed and disposed of. Sewer lines were removed within 10 feet of buildings. Impacted buildings had remaining lines removed during the surveys of buildings. Buildings have also been demolished since the HRA.
- **Action Craig -** Add a list of demolished buildings since the HRA.
- **Action Scott –** Add sediment results/concentrations to support the CSM under "Current Status" bullet.
- Karla identified concerns with 15 out of 63 trench units at Parcel G with gamma scan measurements that were never investigated. The highest was 16,000 versus and investigation level of 7,000. Scott indicated that there is no relationship between Ra-226 activity in soil and gamma readings and the results are not uncommon in fill areas. This indicates that the work plan was not followed but not that there is contamination present. This was added as an uncertainty.
- The potential for commodities were discussed. Danielle indicated that identifying them was not an objective of the previous investigations and remediation by TtEC, they are not identified in the ROD, are outside the scope of this meeting, and would require an amendment to the feasibility study and ROD to address them. Jana looked at the worst 5 measurements collected from rad objects. Danielle indicated that the highest measurements are likely from the IR-02 disposal area and the remedy was selected to address them. EPA indicated that because previous investigations were not conducted in a reliable matter, the potential for commodities exists and is unknown. Since additional investigation is planned, if a concentration of sources is found during the future investigation, the CSM would be revised and addressed at that time. Therefore, potential for commodities was added to the uncertainties.
- Under uncertainties, clarified that there is a lower potential for radiological contamination than originally described in the CSM and that "known" sources were removed. Also added the overestimation of Ra-226 in soil by the onsite lab using an imprecise measurement method.

The team agreed to the list of known release areas revised in the meeting and pending the results of the action items. The CSM will be included in the draft work plan for review.

Sheetal asked for clarification on the Navy's contract. CH2M conducted the data evaluation and is scoped to write the general work plan, and task-specific plan and field work for Parcel G soil. Cabrera, Perma-Fix, Battelle, and Oregon State University (OSU) are subcontractors supporting the work.

January 18, 2018

IV. Site Visit

V. Check-In, Revisit Agenda, and Goal for Day 2

The goal for day 2 is to gain technical team input on the decision criteria for building and soil approaches.

VI. Building Approach

Craig presented the proposed flow chart for the building approach. If any of the final status survey (FSS) results were found to be duplicated based on the evaluation at buildings with high or moderate contamination potential from the HRA, Class 1 and 2 FSSs are proposed. If not, confirmation surveys are proposed. If any of the FSS results were found to be duplicated based on the evaluation at buildings with low contamination potential from the HRA, Class 3 FSSs are proposed. If not, confirmation surveys proposed. Both confirmation surveys include 10% statics, swipes, and scans. The duplicated data

evaluation was re-run after the September 2017 meeting on available alpha, beta, and gamma data to search for duplicated 5-value strings both forward and backward numerically.

Karla asked about the allegations regarding the detector in motion. At the September 2017 meeting, Craig showed where he back calculated the scan minimum detectable concentrations (MDCs) and there were sufficiently slow scan rates for the status survey to be valid.

Karla asked about the allegation that the detector was left to sit. As discussed in the September 2017 meeting, the initial tests to evaluate this were inconclusive and unsuccessful to confirm or deny whether the detector was in motion. Confirmation surveys are proposed. Karla is concerned contamination may be missed.

Jana indicated that because biased samples were not collected in some cases when the investigation levels were exceeded and there was deliberate falsification, the data is not useable. There was a building where rescanning was conducted and contamination was found. Danielle indicated that although the rescanning indicated that contamination was missed, the results were not high enough to require remediation. Jana wants to make sure the data is defensible by following the work plan and providing statistical confidence that release criteria have been met.

Sheetal recommended building resurvey classification based on the HRA. Previously, everything was classified as Class 1 and probably did not need to be. The team agreed that buildings should be reclassified based on the HRA and that using the rescanning data that was conducted with oversight is acceptable.

Derek asked the team about the criteria in the Action Memo and whether the Navy will be held to the criteria as not to exceed values. There is a disconnect because the work plans are based on Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) which does not indicate a point-by-point comparison and allows for the use of the Wilcoxon Rank Sum statistical test (WRS test). Derek asked if a higher cleanup goal can be generated because the WRS test is not being used. Lily indicated that the regulatory agencies understand the difficulties of the low release criteria and she has taken this to her managers and headquarters and their feedback is that it is policy and common practice to use not to exceed values. ORAU indicated that it is not common practice to use not to exceed values and that using MARSSIM, including derived concentration guideline level elevated measurement comparison ($DCGL_{emc}$), is common practice.

VII. Soil Approach

Scott presented the proposed flow chart for the soil approach. Three groups of sampling are proposed:

- Group 1 consists of excavation and placing the material on radiological screening yard (RSY) pads, 100% gamma scan, and systematic and biased sampling from the trench and RSY pads for areas identified with known releases (based on CSM from Day 1).
- Group 2 consists of 100% gamma scan of accessible surface areas (after removal of durable cover), and systematic and biased sampling surface soil samples in trench units with native fill.
- Group 3 consists of random sampling with gamma scans of sample locations and judgmental scans of cores with biased samples if necessary.

For Parcel G, as an example, Groups 1 and 2 would consist of 12 survey units each and Group 3 would consist of 6 survey units with at least one sample in every trench and survey unit.

Action Pat – Provide a crosswalk of the survey units that make up each group in Parcel G for the soil approach.

The regulatory members of the team indicated that the approach does not provide information about the base of trenched and sidewalls and does not take into account the 15 trench units in Parcel G where

biased samples were not collected. The approach accounts for the CSM that the soil has been mixed and homogenized; the surface scans are intended to be representative of soil as a whole; therefore, Group 2 is representative of the whole volume of soil. The team discussed the potential for collecting samples outside trench walls and bias some at depth to provide a level of confidence that the excavation was complete. Scott indicated that going back to the HRA, the removal conducted was overly conservative. Sheetal indicated that this was a good point and the HRA should be explored to support this. Danielle indicated there is historical documentation recommending scoping surveys downstream of Naval Radiological Defense Laboratory (NRDL) sites only. Kevin indicated that in his field experience on similar projects with high levels of contamination, when the lines are removed along with the stained soil immediately surrounding the pipe (found within less than a foot of soil), the confirmation samples have indicated the surrounding soil was clean, even with cracked and damaged pipes. Because the lines are not under pressure, the previous power/pressure-washing does not cause significant impacts to surrounding soil.

There was a general discussion on the EPA and Navy's proposals. The regulatory agencies are still working on a counter-proposal independently. The regulatory agencies are still considering the percentage for the prove-out recommendation and are working on a counter proposal with managers next week.